

CLAIMS

1 1. (currently amended) A predistorter arrangement for linearising a distorting element, the
2 predistorter arrangement comprising:

3 a pilot generator that generates a composite signal comprising an input signal and only a single
4 pilot signal having only one frequency component at a time.

5 a predistorter that predistorts the composite signal to produce a predistorted signal which is
6 supplied to an input of the distorting element, and

7 an error corrector that (1) receives a feedback signal corresponding to an output signal generated
8 by the distorting element in response to the predistorted signal, (2) detects, in the feedback signal, cross-
9 modulation distortion signals derived from cross-modulation of the input signal on the single pilot signal
10 within the distorting element, wherein the cross-modulation of the input signal on the single pilot signal
11 within the distorting element means that modulation of the input signal results in modulation of the single
12 pilot signal in the output signal generated by the distorting element, (3) produces an error correction
13 signal based on the detected cross-modulation distortion signals, and (4) applies the error correction
14 signal to the predistorter to adjust the predistortion of the composite signal by the predistorter to reduce
15 the cross-modulation distortion signals in the output signal subsequently generated by the distorting
16 element.

1 2. (original) A predistorter arrangement as claimed in claim 1, wherein the distorting
2 element is an amplifier.

1 3. (currently amended) A predistorter arrangement as claimed in claim 2, further
2 comprising a pilot remover located downstream of the amplifier that removes the amplified pilot signal
3 from the amplifier output signal prior to or following detection of the presence of distortion signals
4 derived from the single pilot signal in the amplifier output signal.

1 4. (currently amended) A predistorter arrangement as claimed in claim 1, wherein the pilot
2 generator adds [[a]] the single pilot signal to the input signal.

1 5-6. (canceled)

1 7. (currently amended) A predistorter arrangement as claimed in claim 1, wherein the
2 single pilot signal is derived from the input signal.

1 8. (currently amended) A predistorter arrangement as claimed in claim 7, wherein the
2 single pilot signal is a frequency translated version of a frequency component in the input signal.

1 9-11. (canceled)

1 12. (currently amended) A predistorter arrangement as claimed in claim 1, wherein the
2 frequency of the single pilot signal is frequency hopped.

1 13. (previously presented) A predistorter arrangement as claimed in claim 1, wherein the
2 predistorter comprises an input signal path for receiving an input signal which is required to be processed
3 by the distorting element, and a distortion path in which an input signal from the input signal path is
4 processed to generate a distortion signal, which is combined with the input signal in the input signal path
5 to produce the predistorted input signal.

1 14. (previously presented) A predistorter arrangement as claimed in claim 13, wherein the
2 error corrector correlates the distorting element output signal with the distortion signal to produce an
3 error correction signal.

1 15. (previously presented) A predistorter arrangement as claimed in claim 14, wherein the
2 distortion path includes an adjuster that adjusts the distortion signal in phase and amplitude in
3 dependence on the error correction signal.

1 16. (previously presented) A predistorter arrangement as claimed in claim 15, wherein the
2 adjuster comprises a variable phase shifter and a variable attenuator.

1 17. (previously presented) A predistorter arrangement as claimed in claim 15, wherein the
2 adjuster comprises an in-phase adjuster and a quadrature phase adjuster.

1 18-20. (canceled)

1 21. (currently amended) A method for linearising a distorting element, the method
2 comprising the steps of:
3 generating a composite signal comprising an input signal and only a single pilot signal having
4 only one frequency component at a time.

predistorting the composite signal to produce a predistorted signal which is supplied to an input of the distorting element,
receiving a feedback signal corresponding to an output signal generated by the distorting element in response to the predistorted signal,
detecting, in the feedback signal, cross-modulation distortion signals derived from cross-modulation of the input signal on the single pilot signal within the distorting element,
producing an error correction signal based on the detected cross-modulation distortion signals, wherein the cross-modulation of the input signal on the single pilot signal within the distorting element means that modulation of the input signal results in modulation of the single pilot signal in the output signal generated by the distorting element, and
applying the error correction signal to the predistorter to adjust the step of predistorting the composite signal to reduce the cross-modulation distortion signals in the output signal subsequently generated by the distorting element.

22-28. (canceled)

29. (currently amended) A circuit comprising:
a pilot generator that generates and adds only a single pilot signal having only one frequency component at a time to a received input signal to generate a composite signal comprising the received input signal and the single pilot signal;
a predistorter that predistorts the composite signal to produce a predistorted signal;
an amplifier that receives the predistorted signal and generates an amplifier output signal; and
an error corrector that (1) receives a feedback signal corresponding to the amplifier output signal, (2) detects, in the feedback signal, cross-modulation distortion signals derived from cross-modulation of the input signal on the single pilot signal within the amplifier, wherein the cross-modulation of the input signal on the single pilot signal within the amplifier means that modulation of the input signal results in modulation of the single pilot signal in the output signal generated by the amplifier, (3) produces an error correction signal based on the detected cross-modulation distortion signals, and (4) applies the error correction signal to the predistorter to adjust the predistortion of the composite signal by the predistorter to reduce the cross-modulation distortion signals in the output signal subsequently generated by the amplifier.

30. (new) The circuit of claims 29, wherein the single pilot signal is derived from the input signal.

1 31. (new) The circuit of claim 30, wherein the single pilot signal is a frequency translated
2 version of a frequency component in the input signal.

1 32. (new) The circuit of claim 29, wherein the frequency of the single pilot signal is
2 frequency hopped.

1 33. (new) The method of claims 21, wherein the single pilot signal is derived from the input
2 signal.

1 34. (new) The method of claim 33, wherein the single pilot signal is a frequency translated
2 version of a frequency component in the input signal.

1 35. (new) The method of claim 21, wherein the frequency of the single pilot signal is
2 frequency hopped.